References

1. Gaudino M, Zamparelli R, Andreotti F, Burzotta F, Iacoviello L, Glieca F, et al. Normothermia does not improve postoperative hemostasis nor does it reduce inflammatory activation in patients undergoing primary isolated coronary artery bypass. *J Thorac Cardiovasac Surg.* 2002;123:1092-100.
2. Misawa Y, Konishi H, Kawahito K, Fuse K. Platelet activation and aggregation during normothermic cardiopulmonary bypass. *Jpn J Thorac Cardiovasc Surg.* 2002;49:21-8.
3. Misawa Y, Kawahito K, Konishi H, Fuse K. Cytokine mediate endothelial activation during and after normothermic cardiopulmonary bypass: heparin-bonded versus non heparin-bonded circuits. *ASAIO J.* 2000;46:740-3.

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Reply to the Editor:

In contrast to the studies quoted by Misawa and Fuse, our investigation was aimed at comparing the effect of normothermic versus hypothermic cardiopulmonary bypass (CPB) on postoperative hemostasis and inflammatory activation. For this purpose, patients were randomly assigned to one of the two CPB temperatures (37°C vs 28°C), and several inflammatory and coagulative markers were evaluated at different time intervals in the postoperative period. We found no difference between the two groups and concluded that, at least for our CPB times, CPB temperature has no effect on postoperative hemostasis and inflammatory activation.

However, we congratulate Misawa and Fuse for their interesting studies on the effects of normothermic CPB on platelet function and cytokine production and we applaud their efforts to clarify the systemic effects of normothermia.

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An economic evaluation of lung transplantation

To the Editor:

In the March 2002 issue of this *Journal*, Anyanwu and associates[1] reported a prospective multicenter study about cost-effectiveness and cost-utility for the different types of lung transplantation. Although the study is an important addition to the existing literature, the method by which survival gain was calculated and the impact on their sensitivity analyses should be discussed further.

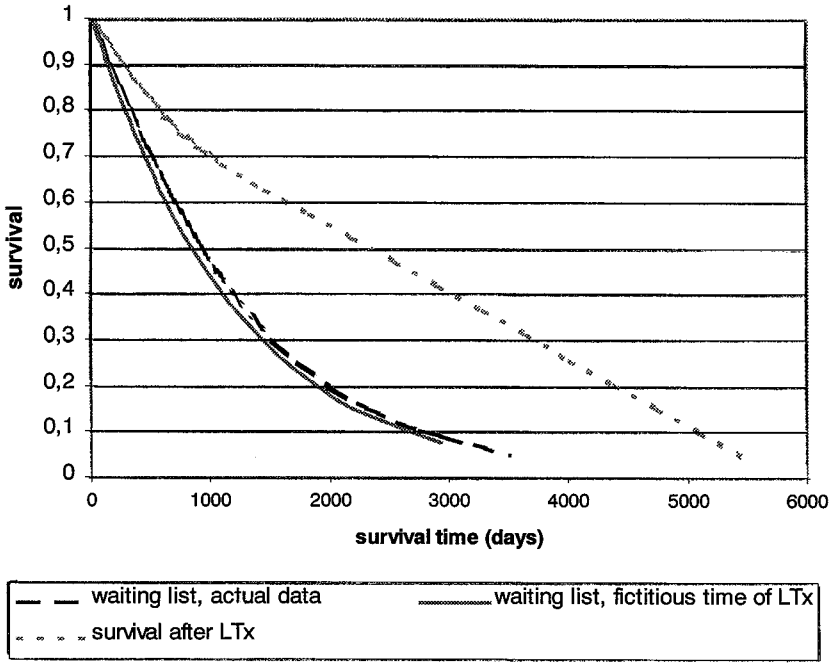

Figure 1. Actual waiting list survival, fictitious waiting list survival, and survival after lung transplantation *(LTx)* in Groningen lung transplant program, 1990 through 1995.

First, in the presented study Anyanwu and associates[1] calculated survival for the first 4 years from actual data and from years 4 to 15 by using a parametric Weibull model, in accordance with a previous analysis by our group.[2] At 15 years, the survival curve after transplantation was cut off despite a survival of at least 25%, depending on the type of transplantation. Survival on the waiting list declined to 0% after 11 years. For a valid comparison of costs and effects of both conditions from a lifetime perspective, a survival curve after transplantation should be constructed with further extrapolation until a survival of 0%.[3,4] Therefore the survival after lung transplantation in the presented study was underestimated, because prolonged survival beyond 15 years was neglected. A rough calculation indicates that extrapolation to 0% survival would amount to an estimated additional survival gain after transplantation of 2 years. This is why, in contrast to others,[5] Anyanwu and colleagues[1] did not find survival as a principal determinant of cost-effectiveness in their sensitivity analyses.

Second, the survival curve for the waiting list, to which the survival after lung transplantation was compared, was not constructed in accordance with previously reported methods.[3,4] In previous studies the transplantation date was chosen as the starting point for this comparison, because it would be unrealistic to assume that differences in survival occur before transplantation. For the situation on the waiting list, no real transplantation date exists, and a fictitious transplantation moment should be created (Figure 1). This moment should be based on the average stay of patients on the waiting list before transplantation (about 12 months in the study by Anyanwu and associates[1]). However, day 0 was used as the starting point for the waiting list. Applied to our own data, these two methods result in a difference in the cumulative number of life years on the waiting list of 0.5 years (17%).

Obviously, changing the method for the calculation of survival gain will also influence the number of quality-adjusted life years gained. It is possible that this would affect the results of the sensitivity analyses with respect